

Investigating Rubber Mats on Concrete Slats in Deep Pit Confinement Buildings for Finishing Cattle-progress Report

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Summary and implications

Confinement housing of beef cattle is becoming more common due to increased environmental concerns and the desire to capture potential efficiencies in cattle performance and manure value. Deep pit facilities with slatted floors are being built, however one of the disadvantages may be the effect on feet and legs and performance consequences for cattle being on concrete slats for extended periods of time. Rubber mats constructed to be installed over the slats are being used to overcome these issues. No comparable data has been gathered in typical U.S feeding situations to measure potential benefit of these mats. This investigation is attempting to gather data to determine potential advantages of the mats.

Introduction

In the summer of 2011 a project with Summit Farms of Alden, Iowa was discussed. Summit Farms was building new deep pit beef confinement buildings and considering placing rubber mats over the slats. Iowa State University Extension and the Iowa Beef Center offered to help conduct a study and Summit Farms installed three different types of mats in 9 pens with 3 pens of concrete slats with no mat. Comparisons of cattle performance, cattle footing, pulls, and death loss are being made.

Materials and Methods

Three replications of four pens each were laid out in 2 confinement deep pit beef barns in central Iowa area. Each pen is approximately 80 ft. by 40 ft. and is designed to hold 140 head at 22.5 sq. ft. per head with 6.75 in bunk space at maximum capacity. All four pens in a replication are side by side. Similar type cattle or approximately 560 head are purchased to fill one replication. These are then allocated between the four pens. In all but one replication cattle have been individually weighed going on trial in the replicates. Feed consumption is monitored as well as pulls and death loss by pen during the feeding period by farm staff. While cattle are being checked during daily pen walking a trained observer is observing slips and falls of cattle in each pen and recording that data on a periodic basis. Cameras have been set up to monitor one pen of cattle on concrete and one pen of cattle on mats. Gait scores on individual cattle in pens are

being observed as cattle are worked to relate to lameness issues. Close out data from Summit Farms is used to document cattle performance in the individual pens. The first cattle in the barn and used in this trial were fed from October 2011 to March 2012. All three replications were filled during the first feeding period. Due to difficulty sourcing cattle only one replicate was fed from March of 2012 to Aug of 2012 and one more was fed from May of 2012 to Sept of 2012.

So far 5 replicates or 20 pens of cattle over three different feeding periods have close out information. More closeouts will be available in the next year.



Installing mats in pens.

Results and Discussion

In this progress report the only information being reported is the daily gain, feed efficiency, and feed intake information from the five replications to date. Additional close out information will be added to the analysis when available. The data on pulls, death loss, slips and falls and video information has not been summarized or analyzed at this point in time. In table 1 the mean and standard error for daily gain, feed efficiency and feed intake are provided by floor type over all replications and feeding periods. All mat types are combined in this report and compared to concrete slats. Rubber mats showed numerical differences in daily gain, feed efficiency, and feed intake compared concrete slats on average in this trial, however no differences are statistically significant at this time. Increased replications are necessary to statistically confirm a difference of this magnitude.

No comparison of mat types has been made at this point in time.



Cattle in confinement barn on rubber mats.

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Table 1. Comparison of daily gain, feed efficiency and feed intake between rubber mat flooring and concrete slats (Mean \pm S. E.)

	Flooring Type		Probability >F
	Rubber mats	Concrete slats	
Daily Gain lbs./hd/day	3.08 \pm .13	2.86 \pm .22	0.4132
Feed Efficiency lbs. feed/lb. gain	6.76 \pm .17	7.04 \pm .30	0.4214
Daily feed intake lbs. feed/hd/day	20.79 \pm .48	20.19 \pm .83	0.5399